Remarks

Claims 1-3 and 5 have been examined in this application. Reconsideration is respectfully requested in view of this amendment and the following remarks.

The Examiner indicates in the Office Action that claims 1 and 3 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,383,691 to Potter in view of JP Patent No. 60199544 to Azuma. The Examiner indicates as follows:

"Potter disclose a shaft sealing apparatus, comprising:

a vacuum casing (casing that surrounds the shaft, column 2, line 66-67) formed with a vacuum chamber (chamber in the casing);

a drive shaft (35) having an outer cylindrical surface (cylindrical surface of 35) and movably extending in the vacuum chamber of the vacuum casing;

a sealing ring (seal ring shown in figure 3) in the form of an annular ring shape (the seal ring has an annular ring shape) and including a sealing lip (13 having a lip) held in contact with the outer cylindrical surface of the driving shaft, an annular spring member (14) operative to impart a force to the sealing lip to ensure that the sealing lip is held in tight contact with the outer cylindrical surface of the driving shaft, and

a peripheral portion (20) radially outwardly extending from the sealing lip;

a coil spring 14 (well know in the art that coil springs are made from a wire wrapped helical in shape).

Potter discloses the invention substantially as claimed above but fails to disclose the outer

cylindrical surface of the drive shaft is smaller in surface roughness Ra than 0.1 micrometer. Azuma teaches to have a surface of a shaft to be smaller in surface roughness Ra than 0.1 micrometer. Azuma teaches to have a surface to have a surface roughness as taught by JIS B0601. It would have been obvious to one having ordinary skill in the art at a the time the invention was made to configure the outer cylindrical surface to have a surface roughness that is smaller in surface roughness Ra than 0.1 micrometer as taught by Azuma, since have a roughness would be obvious to one having ordinary skill in the art (since JIS B0601 teaches to have surface roughness)."

Claim 1 recites "a sealing lip held in contact with said outer cylindrical surface of said driving shaft and formed with an annular groove, an annular spring member received in said annular groove of said sealing lip and operative to impart a force to said sealing lip to ensure that said sealing lip is held in tight contact with said outer cylindrical surface of said driving shaft". Neither the references to Potter and Azuma disclose "**an annular spring member received in said annular groove of said sealing lip**". Accordingly, Potter and Azuma do not recognize an advantage as attained by the shaft sealing apparatus according to the present invention that the sealing lip can be held in tight contact with the outer cylindrical surface of the driving shaft.

Claim 1 further recites "said outer cylindrical surface of said driving shaft is smaller in surface roughness Ra than 0.1 (μm)". Neither Potter nor Azuma discloses this feature.

For an understanding of Azuma, the description on page 234 from line 14 in left column to line 3 in right column of the Azuma, as translated from Japanese into English, states: *"A casting mold 13 is produced by a mold 16 coated with a mold releasing agent 21. The mold releasing agent*

21 is placed on the surface of casting mold 13 after the mold 16 is remolded by the casting model. After the mold 16 is produced, the mold 16 removed from the casting model 13. The surface of the mold 16 thus produced has a roughness of 10s or less. The mold releasing agent 21 makes it possible to remarkably reduce the friction resistance of the mold 16 to the casting mold 13. Accordingly, the mold 16 thus produced can be released from the casting mold 13 in extremely easy manner."

The surface roughness R_{max} of 0.6S corresponds to a surface roughness Ra of 0.1μm. Azuma discloses a surface roughness R_{max} of 10S. Thus, it is clear that Azuma discloses a **much higher surface roughness** than claimed in claim 1.

Furthermore, the motivation for the proposed modification stated in the Office Action is not completely understood by the Applicant. It is well established that an obviousness rejection requires an objective motivation to combine two prior art references. The Office Action states that it would be obvious "to have a surface roughness that is smaller in surface roughness Ra than 0.1 micrometer as taught by Azuma, since having a roughness would be obvious to one having ordinary skill in the art (since JIS B0601 teaches to have a surface roughness)." Accordingly, the Office Action essentially argues that it would be obvious to combine the teachings of the references because it would be obvious. It is respectfully submitted that this reasoning is circular and improper in an obviousness rejection. If the rejection is maintained, clarification, citing an objective motivation to combine the references, is respectfully requested.

For the reasons stated above, it is respectfully submitted that claim 1 is allowable over the

cited prior art. Claim 3 depends from claim 1 and is allowable as depending from as allowable claim.

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Potter and Azuma as applied to claim 1 above, and further in view of U.S. Patent No. 5,853,502 to Aihara. Claim 2 depends from claim 1. Aihara fails to cure the deficiency in the rejection of claim 1. As such, claim 2 is allowable over the cited prior art.

Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Potter and Azuma as applied to clam 1 above, and further in view of U.S. Patent No. 4,331,339 to Reinsma. Claim 5 depends from claim 1. Reinsma fails to cure the deficiency of claim 1. As such, claim 5 is allowable over the cited prior art.

In view of the foregoing description, it is submitted that this application is in condition for allowance and favorable reconsideration thereof is earnestly solicited.If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Respectfully submitted,

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